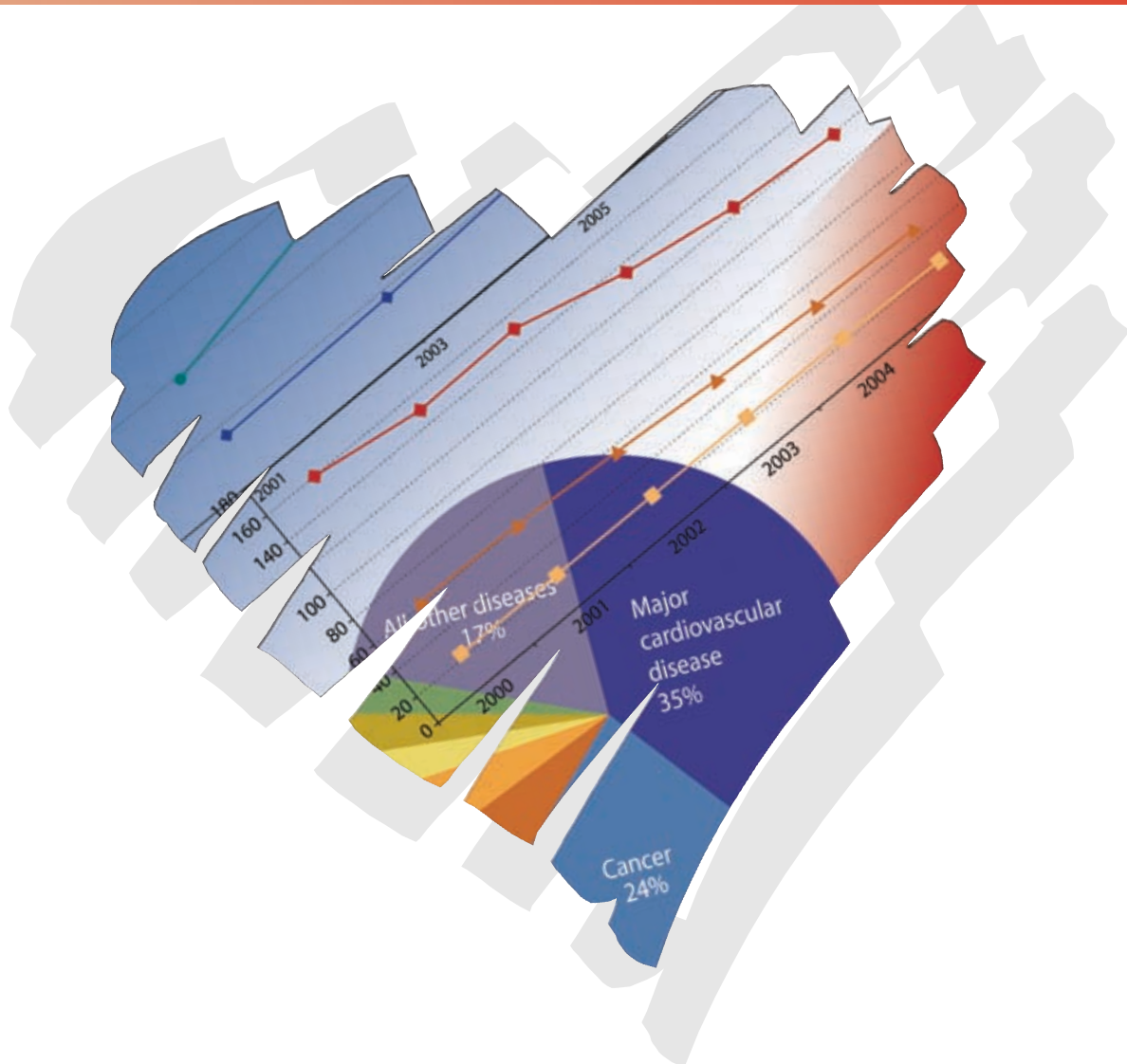


Cardiovascular Care Performance

Wisconsin Collaborative Diabetes Quality Improvement Project

KNOW THE PAST, PLAN THE FUTURE



Wisconsin Heart Disease and Stroke Prevention Program

August 2007



Report Highlights

As a partner of the Wisconsin Collaborative Diabetes Quality Improvement Project, the Heart Disease and Stroke Prevention Program is pleased to recognize the willingness of multiple Wisconsin HMO partners to share best practices and address health issues.

In Wisconsin, cardiovascular disease, including heart disease and stroke, remains the leading cause of death even though mortality rates are declining.

- ✓ Health care costs are increasing (estimated \$8.6 billion in direct and indirect costs in 2007)
- ✓ In absolute numbers, more women than men die of heart disease and stroke
- ✓ The age-adjusted mortality rate among African Americans is 27% higher than among whites
- ✓ Having high blood pressure doubles the risk of developing heart disease and quadruples the risk of stroke
- ✓ Having high cholesterol doubles the risk of developing cardiovascular disease
- ✓ Having diabetes doubles to triples the risk of developing cardiovascular disease

With respect to Wisconsin's HMO Collaborative selected HEDIS® cardiovascular care performance measures:

- ✓ Overall improvement occurred at a rate comparable to the rest of the nation
 - High blood pressure control – Wisconsin fared consistently better than the national average
 - Cholesterol management – Wisconsin exceeded the national average, but change over time occurred more slowly in Wisconsin than it did for the entire nation
 - Beta-blocker treatment measure – Wisconsin was about the same as the national average
- ✓ Beta-blocker treatment – high performers in Wisconsin reached 100 percent
- ✓ Cholesterol screening – high performers in Wisconsin reached 95 percent
- ✓ Cholesterol controlled – high performers in Wisconsin reached 90 percent
- ✓ High blood pressure controlled – variation has narrowed and high performers approached 80 percent

This report will demonstrate narrowing variation in performance among plans, which appears to validate the Wisconsin HMO collaborative process.



Introduction

The purpose of this report is to bring new attention to cardiovascular issues and to provide an analysis of performance measures that can help improve quality of care.

The Wisconsin Collaborative Diabetes Quality Improvement Project (HMO Collaborative) began in 1998 as an initiative to promote collaboration among competitive health maintenance organizations (HMOs) to improve the quality of care for patients with diabetes. Since then, the HMO Collaborative has met quarterly to evaluate implementation of the *Wisconsin Essential Diabetes Mellitus Care Guidelines* and share resources, strategies, and best practices to improve health care for their members across Wisconsin.

In 2000, the Wisconsin Heart Disease and Stroke Prevention Program (HDSP) was funded by the Centers for Disease Control and Prevention (CDC) to reduce the burden of heart disease and stroke. The relationship between cardiovascular disease and diabetes is strong. Indeed, patients with diabetes have two to three times the risk of heart attack and stroke as that of the general population.^{1,2} The HDSP joined efforts with the HMO Collaborative in 2001 to encourage adherence to clinical guidelines on high blood pressure and high cholesterol and implement performance improvement strategies.

The HMO Collaborative is the first of its kind and serves as a national model in monitoring diabetes and cardiovascular care performance through collection of the Health Plan Employer Data and Information Set (HEDIS®) measures. HEDIS® data is managed by the National Committee for Quality Assurance (NCQA) which uses the information for accreditation of managed care organizations. The selected HEDIS® cardiovascular care measures have become an important tool for employers and consumers as one way to evaluate health care performance. Since 2001 (care provided in 2000), the HMO Collaborative has collected data on the following selected HEDIS® cardiovascular care measures:

- Beta-blocker treatment after heart attack
- High blood pressure controlled ($\leq 140/90$ mmHg [ages 46-85])
- Cholesterol management after acute cardiovascular event – LDL-C screening
- Cholesterol management after acute cardiovascular event – LDL-C controlled (<130 mg/dL)

Two additional measures, one added in 2005 and the other in 2004, are briefly addressed:

- Persistence of beta-blocker treatment
- Cholesterol management after acute cardiovascular event – LDL-C controlled (<100 mg/dL)

The information in this report can continue to assist HMOs' efforts as they continue to improve quality of care and empower members to live heart-healthy lives.

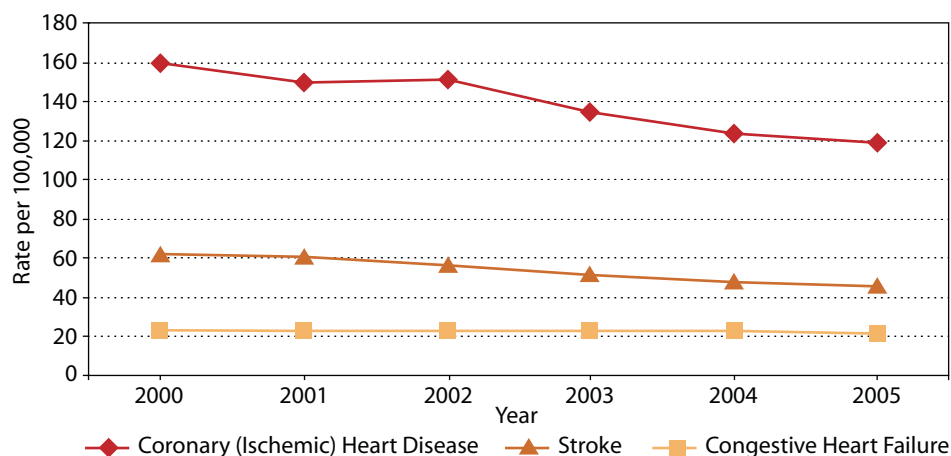


The Burden of Heart Disease and Stroke In Wisconsin

Cardiovascular Disease Death Rates

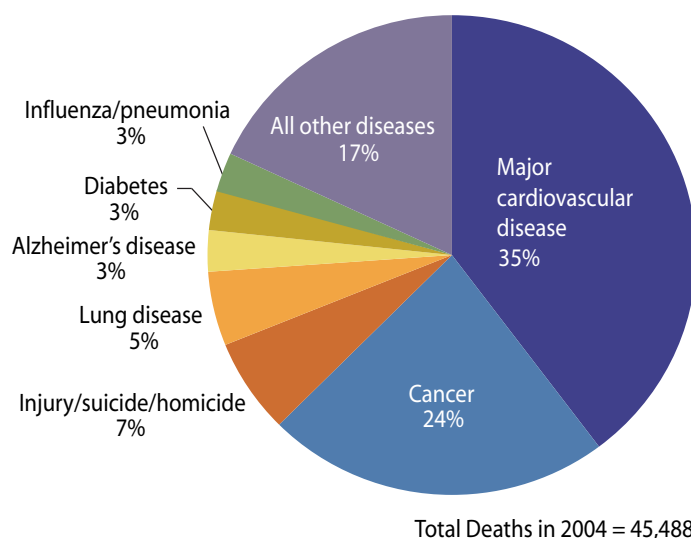
Age-adjusted death rates for coronary heart disease and stroke have declined since 2000³ (Figure 1). However, congestive heart failure death rates are not decreasing.

Figure 1: Trends in Age-Adjusted Cardiovascular Disease Death Rates, 2000-2005



Although cardiovascular disease death rates have been declining, cardiovascular disease remains the leading cause of death and disability among men and women of all racial and ethnic groups in Wisconsin.³ Cardiovascular disease, including heart disease and stroke, was the leading cause of death (16,087 total deaths) among Wisconsin residents in 2004, accounting for 35% of all deaths³ (Figure 2).

Figure 2: Leading Underlying Causes of Death, Wisconsin, 2004



A recent *New England Journal of Medicine* article concludes that “approximately half the decline in U.S. deaths from coronary heart disease from 1980 through 2000 may be attributable to reductions in major risk factors and approximately half to evidence-based medical therapies.”⁴

The Burden of Heart Disease and Stroke In Wisconsin

Cardiovascular-Related Deaths by Race/Ethnicity, Gender, and Geographic Area

- In Wisconsin, the coronary heart disease mortality rate among American Indians is 10% higher than among whites. The stroke mortality rate among African Americans is 27% higher than among whites.³
- In the past, cardiovascular disease was considered to be predominantly a disease of men. Now, cardiovascular disease is recognized as the major killer of women. While age-adjusted cardiovascular disease mortality rates are higher for males, the total number of women who have died of cardiovascular disease over the past five years exceeds the total number of men. In 2005, 35% of female deaths and 33% of male deaths were due to cardiovascular disease.³ This may be explained partly by the fact that women live longer and increased age is a risk factor.
- Rural counties are heavily represented among the counties with the highest stroke and/or coronary heart disease mortality rates. In terms of absolute numbers of deaths, the urban areas predominate.

Economic Costs of Cardiovascular Disease in Wisconsin

Treatment of heart disease and stroke consumes enormous financial resources. These costs continue to rise.

- In 2000, there were 93,986 hospital discharges with diagnoses of cardiovascular disease, accounting for more than \$1.63 billion in associated costs. The corresponding numbers in 2005 were 93,892 hospitalizations, accounting for over \$2.67 billion in associated charges.⁵
- The average cost for one day in the hospital for cardiovascular diagnoses increased 87% from \$3,707 in 2000 to \$6,933 in 2005.⁵
- Total direct and indirect costs have increased from \$5 billion in 2004 to \$8.6 billion in 2007, more than \$1,600 for every man, woman, and child in Wisconsin.⁶



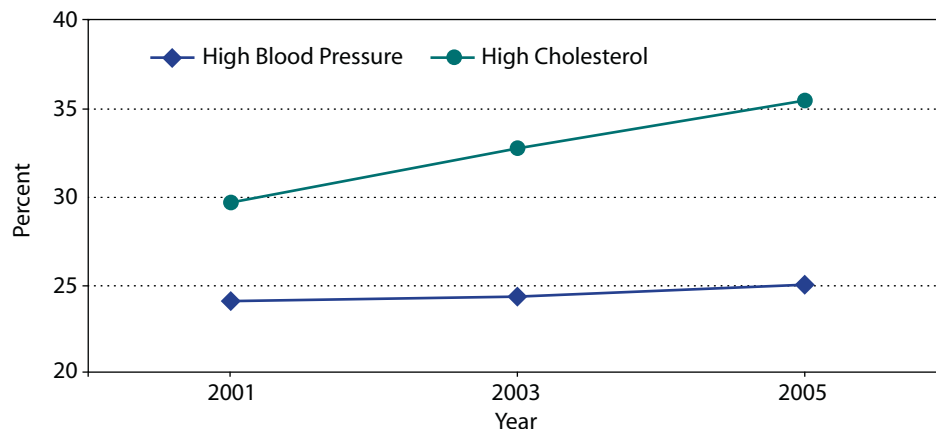
Prevalence of Cardiovascular Disease Risk Factors

Risk factors for heart disease and stroke include smoking, overweight and obesity, physical inactivity, poor nutrition, diabetes, high blood pressure, and high cholesterol. Lifestyle changes provide a prevention base to reduce the need for medical intervention.

The HDSP focuses on detecting and treating high blood pressure and high cholesterol.

- In 2005, 25% of Wisconsin adults reported they had been told by a health care professional that they had high blood pressure – well above the Healthy People 2010 goal of 16%⁷ (Figure 3).
- The percentage of Wisconsin adults reporting a diagnosis of high cholesterol increased 56% from 1995-2005 (23% to 36%). The percentage in 2005 was more than double the Healthy People 2010 goal of 17%^{7, 8} (Figure 3).
- High blood pressure more than doubles the risk of developing heart disease and quadruples the risk of stroke.^{9, 10}
- High cholesterol contributes to atherosclerosis, the gradual buildup of fatty plaques in the arteries that may lead to heart attack and stroke. People with high cholesterol have twice the risk of developing heart disease and stroke as those without high cholesterol.^{11, 12}
- A joint statement from the American Heart Association and the American Diabetes Association explains that elevated blood pressure is a risk factor for both microvascular and macrovascular disease in diabetes and that “many have argued that blood pressure management is the most critical aspect of the care of the patient with diabetes.”¹

Figure 3: High Blood Pressure and High Cholesterol Reported by Wisconsin Adults, 2001-2005*



Source: Wisconsin Behavioral Risk Factor Survey, Bureau of Health Information and Policy, DPH, DHFS.

*Data were not collected in 2002 and 2004

The increase in high cholesterol diagnoses reported by residents may reflect several factors – an aging population, increasing rates of poor diet and physical inactivity, and/or more widespread screening and awareness of the importance of cholesterol control.



Trends in Selected HEDIS® Cardiovascular Care Measures

Performance on Selected HEDIS® Cardiovascular Care Measures

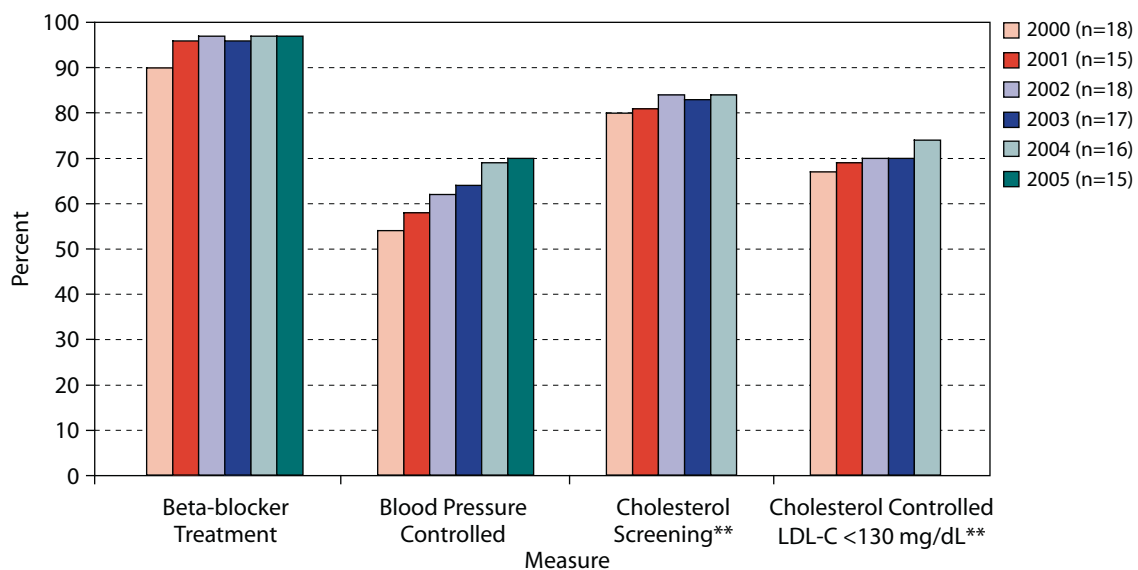
The data reviewed are for HEDIS® 2001-2006 (care provided from 2000-2005). During this time period, the percent of patients receiving selected HEDIS® Cardiovascular Care measures improved in each area being tracked (Figure 4).

- Beta-blocker Treatment after Acute Cardiovascular Event improved 8% (7 percentage points; 90% to 97%) for care provided in 2000-2005.
- High Blood Pressure Controlled improved 30% (16 percentage points; 54% to 70%) for care provided in 2000-2005.
- Data for the Persistence of Beta-blocker Treatment measure was only collected for care provided in 2005 (70%).

For care provided in 2005, the Cholesterol Management measure specifications changed significantly. The NCQA chose not to use or report 2005 data for these measures, due to problems with the denominator. The HMO Collaborative also did not use or report data for these measures in 2005.

- Cholesterol Screening after Acute Cardiovascular Event improved 5% (4 percentage points; 80% to 84%) from 2000-2004.
- Cholesterol Controlled (LDL-C <130 mg/dL) after Acute Cardiovascular Event improved 10% (7 percentage points; 67% to 74%) from 2000-2004.
- Cholesterol Controlled (LDL-C <100 mg/dL) after Acute Cardiovascular Event was only collected in 2004 (57%).

Figure 4: Percent of Patients Receiving Selected HEDIS® Cardiovascular Care Measures, Care Provided in 2000-2005*



* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

** Data from the cholesterol management measures was not used or reported for HEDIS® 2006.

Trends in Selected HEDIS® Cardiovascular Care Measures

Comparison of Wisconsin and National HEDIS® Cardiovascular Care Measures

For care provided in 2000-2005, the HMO Collaborative improved performance at a rate comparable to the rest of the nation.

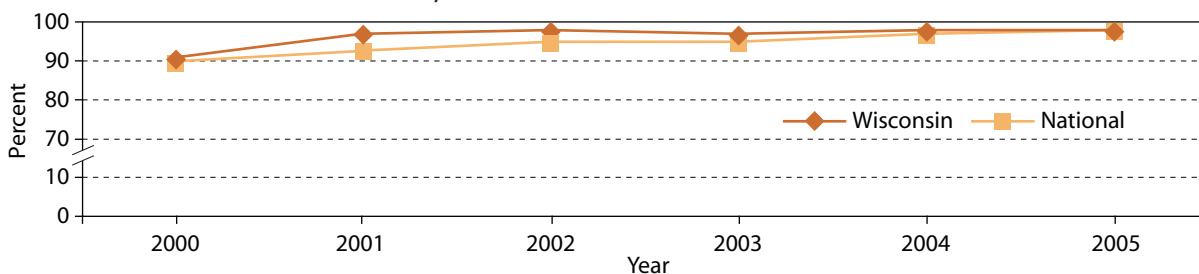
In addition, among patients with diabetes, Wisconsin was the top-performing state in the nation on two cardiovascular-related HEDIS® Comprehensive Diabetes Care measures for HEDIS® 2006:

- Cholesterol Controlled – LDL-C <130 mg/dL
- Cholesterol Screening

Beta-Blocker Treatment After Acute Cardiovascular Event

- From HEDIS® 2001-2006 (care provided in 2000-2005), performance for Beta-blocker Treatment after Acute Cardiovascular Event was about the same in Wisconsin as it was in the rest of the nation (Figure 5).

Figure 5: Wisconsin vs. National Performance on Beta-blocker Treatment after Acute Cardiovascular Event, Care Provided in 2000-2005*

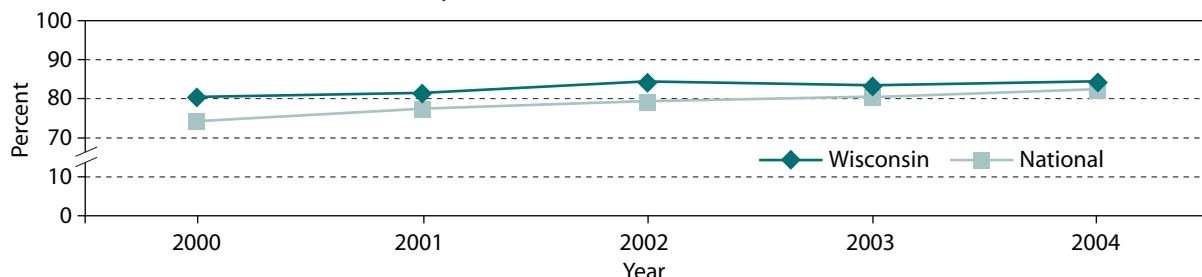


* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Cholesterol Management After Acute Cardiovascular Event

- For the Cholesterol Management after Acute Cardiovascular Event measures, performance has exceeded the national average. However, while Wisconsin performed above the national average for both Cholesterol Management measures for care provided in 2000, this gap closed significantly by 2005. Change over time occurred more slowly in Wisconsin than it did for the entire nation (Figure 6, 7).
- For care provided in 2005, the Cholesterol Management measure specifications changed significantly. The NCQA chose not to use or report 2005 data for these measures, due to problems with the denominator. The HMO Collaborative also did not use or report data for these measures in 2005.

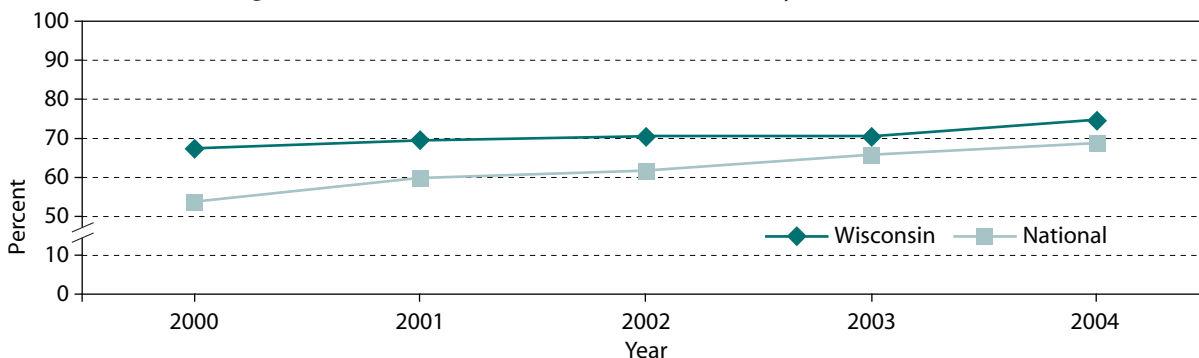
Figure 6: Wisconsin vs. National Performance on Cholesterol Screening after Acute Cardiovascular Event, Care Provided in 2000-2004*



* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Trends in Selected HEDIS® Cardiovascular Care Measures

Figure 7: Wisconsin vs. National Performance on Cholesterol Controlled LDL-C <130 mg/dL after Acute Cardiovascular Event, Care Provided in 2000-2004*

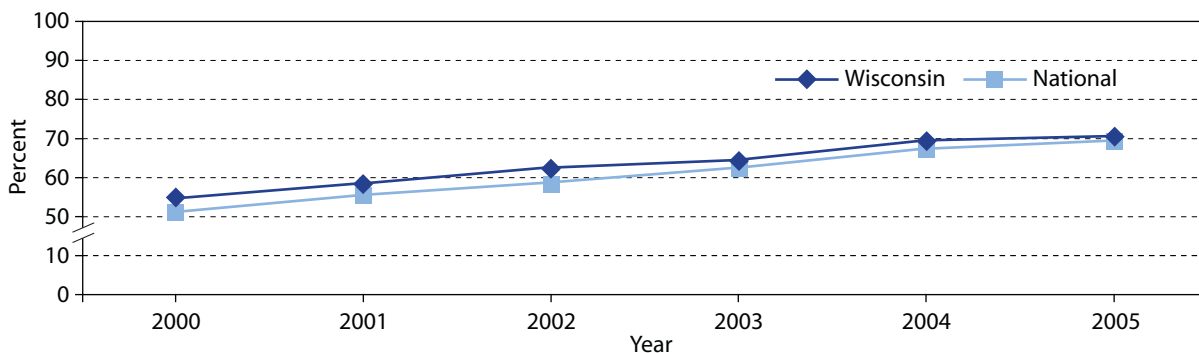


* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

High Blood Pressure Controlled

- For the High Blood Pressure Controlled measure, Wisconsin's performance has consistently been slightly better than the national average. Change over time occurred at roughly the same rate in Wisconsin as it did for the entire nation (Figure 8).

Figure 8: Wisconsin vs. National Performance on High Blood Pressure Controlled, Care Provided in 2000-2005*



* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Trends in Selected HEDIS® Cardiovascular Care Measures

Performance Variation in Selected HEDIS® Cardiovascular Care Measures

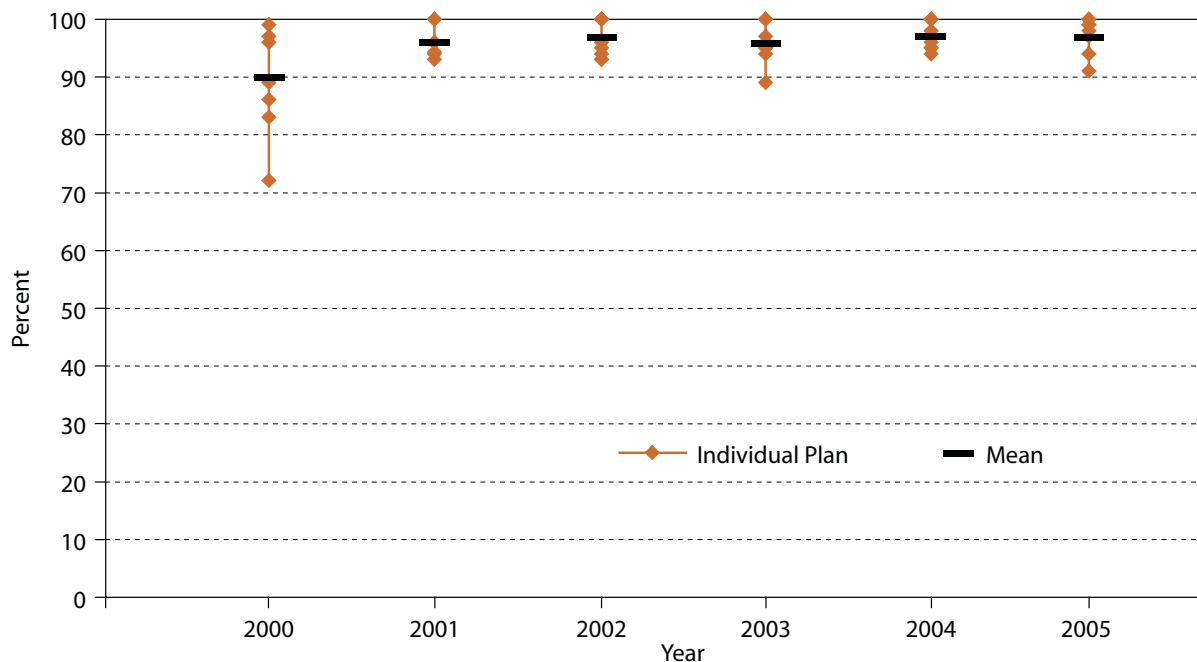
One of the goals in monitoring cardiovascular care measures is to increase the mean and decrease the range in performance for each measure. A decrease in range – the difference between the highest and lowest performing plans' percentages – means that performance among participating plans has become more consistent.

The graphs in this section show a data point for each participating plan's percentage for each year. The mean for each year is also provided.

Beta-Blocker Treatment After Acute Cardiovascular Event

- The mean percentage of HMO members receiving this measure improved 8% (7 percentage points, 90% to 97%) for care provided in 2000-2005. Most of this change was seen for care provided in 2000-2001, when this measure improved 7% (6 percentage points, 90% to 96%). Since 2001, there is a ceiling effect, with the mean fluctuating between 96% and 97% (Figure 9).
- The range for Beta-blocker Treatment after Acute Cardiovascular Event decreased since 2000, with much of the change seen from 2000-2001. In other words, performance of participating plans has improved and become more consistent over time.

Figure 9: Range, Mean, and Individual Plans' Performance for Beta-Blocker Treatment after Acute Cardiovascular Event, Care Provided in 2000-2005*



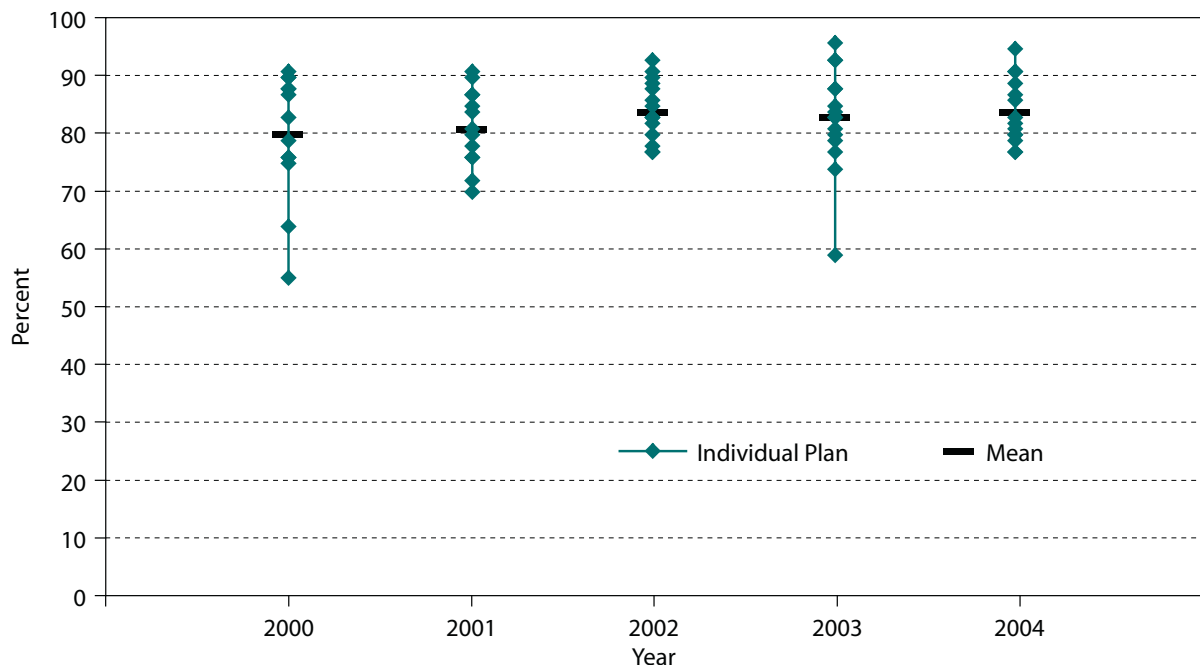
* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Trends in Selected HEDIS® Cardiovascular Care Measures

Cholesterol Screening After Acute Cardiovascular Event

- The mean percentage of members receiving this measure improved 5% (4 percentage points; 80% to 84%) for care provided in 2000-2004. This slight improvement occurred gradually during this time period (Figure 10).
- The range for Cholesterol Screening after Acute Cardiovascular Event fluctuated from year to year between 2000-2004. There was not a consistent decrease in range over time for this measure (Figure 10).
- Much of the variation in range can be explained by lower percentages from a few outlying plans (for example, in 2000 and 2003). Much less variation in performance was seen in 2002 and 2004 than was seen in 2000, 2001, and 2003 (Figure 10).
- For care provided in 2005, the Cholesterol Management measure specifications changed significantly. The NCQA chose not to use or report 2005 data for these measures, due to problems with the denominator. The HMO Collaborative also did not use or report data for these measures in 2005.

Figure 10: Range, Mean, and Individual Plans' Performance for Cholesterol Screening after Acute Cardiovascular Event, Care Provided in 2000-2004*



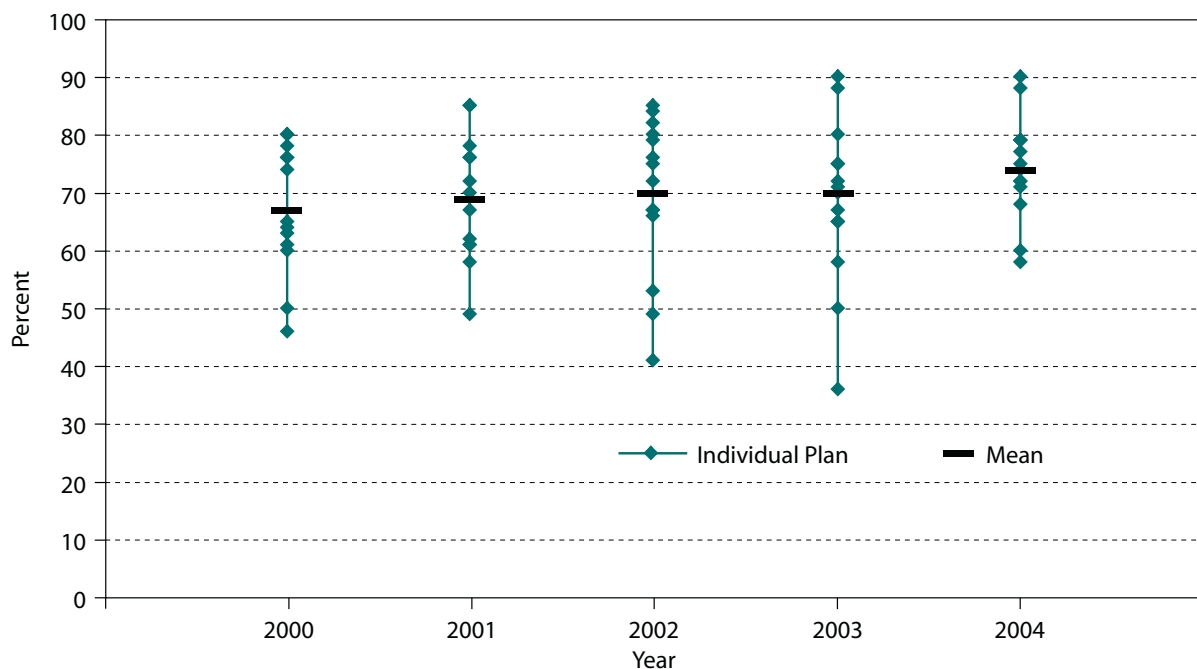
* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Trends in Selected HEDIS® Cardiovascular Care Measures

Cholesterol Controlled, LDL-C <130 mg/dL after Acute Cardiovascular Event

- The mean percentage of members receiving this measure improved 10% (7 percentage points, 67% to 74%) for care provided in 2000-2004. The mean gradually improved over this five year period (Figure 11).
- The range for Cholesterol Controlled, LDL-C <130 mg/dL fluctuated throughout the period from 2000-2004, and there was not a consistent decrease in range over time (Figure 11).
- There was steady improvement in the highest-performing plans' percentages, but there was considerable fluctuation from year to year among the lowest percentages. Greater improvement in the mean would have been seen if there had been less variation between plans.

Figure 11: Range, Mean, and Individual Plans' Performance for Cholesterol Controlled, LDL-C <130 mg/dL after Acute Cardiovascular Event, Care Provided in 2000-2004*



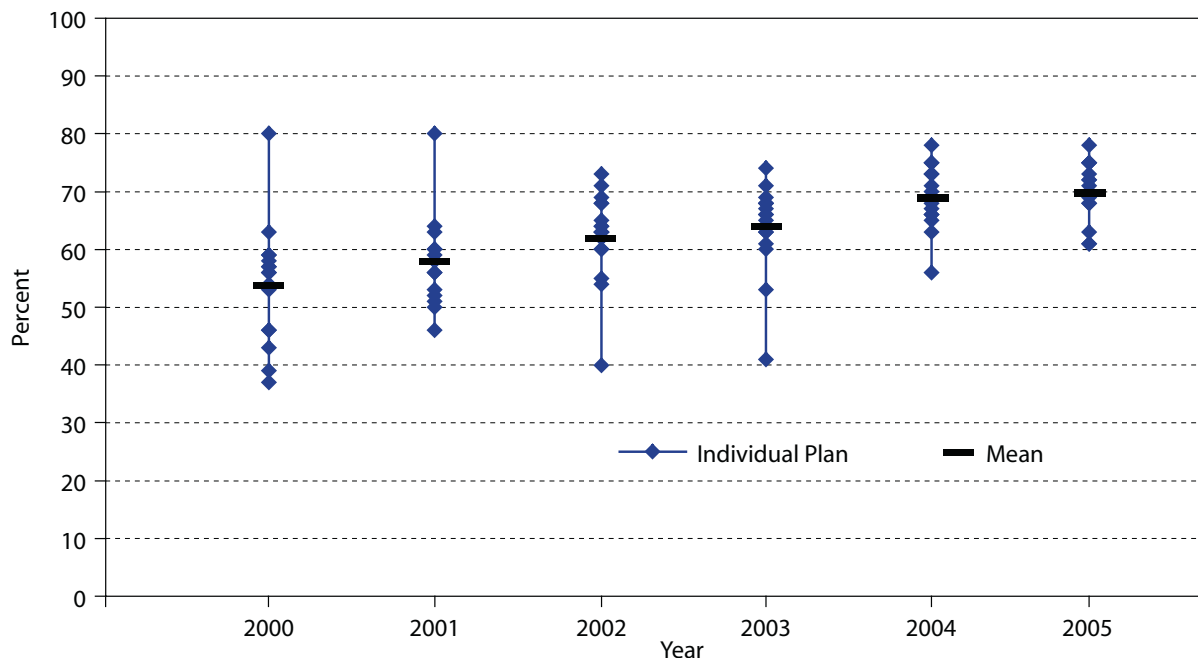
* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.

Trends in Selected HEDIS® Cardiovascular Care Measures

High Blood Pressure Controlled

- The mean percentage for High Blood Pressure Controlled improved 23% (16 percentage points, 54% to 70%) for care provided in 2000-2005 (Figure 12).
- The range for High Blood Pressure Controlled decreased during this time period (Figure 12).
- Except for a few high-performing outliers in 2000 and 2001 and a few low-performing outliers in 2002 and 2003, the range for High Blood Pressure Controlled has remained relatively tight over the past six years. By 2004 and 2005, the range was smaller without any extreme outliers (Figure 12).
- Over the past six years, the individual plans' percentages improved most among the lower performers, while little change was seen in the individual plans' percentages for the higher performers.
- New strategies and interventions may be needed to help higher performers achieve even better outcomes for blood pressure control. Continued improvements in the performance of lower performers' percentages are also important.

Figure 12: Range, Mean, and Individual Plans' Performance for High Blood Pressure Controlled, Care Provided in 2000-2005*



* For all HMOs that submitted data in a given year with a denominator of at least 30. Similar trends exist for the 12 continuously participating plans.



Commentary on Cardiovascular Care Performance

Past Cardiovascular-Related Events

- ✓ Improvements in overall diabetes care through the HMO Collaborative helped address a major cardiovascular risk factor. People with either type 1 or type 2 diabetes mellitus are at increased risk for cardiovascular disease and have worse outcomes after surviving an event.¹
- ✓ The HMO Collaborative's decision to include cardiovascular performance measures prompted discussion of heart disease and stroke issues.
- ✓ The release of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) in May 2003 provided additional attention and national clinical guidelines.
- ✓ The Cardiovascular Risk Reduction Initiative in 2004 and individual health plan cardiovascular initiatives increased awareness of heart disease and stroke risk factors among members and provided collective experience on the topic.

Future Plan

- ✓ Identify new initiatives to support high performing plans in excelling beyond their "ceiling" of consistent performance.
- ✓ Share best practices to help all plans improve care.
- ✓ Continue the focus on improving the statewide mean and narrowing the gap between high and low performing plans.
- ✓ Continue to encourage health plans' enthusiasm for and participation in collaborative initiatives.

Wisconsin can lead the nation in detecting and controlling cardiovascular risk factors. Innovative and dedicated attention to heart disease and stroke will create the most effective strategies. Use of national best practices and programs on high blood pressure and high cholesterol control will lead to new ideas and interventions.



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Technical Notes

Invitations to participate in the Wisconsin Collaborative Diabetes Quality Improvement Project were mailed to Wisconsin health plans/systems. Participants were asked to submit HEDIS® (Health Plan Employer Information and Data System) data from the selected Cardiovascular Care measures. Data were also collected for Comprehensive Diabetes Care measures, selected Cancer Screening measures, and selected Asthma Care measures. HEDIS® data reflects care provided in the previous calendar year (i.e., HEDIS® 2006 reflects care provided in 2005). The Project adopted NCQA's current HEDIS® definitions to maintain consistency in data collection.

Participating health plans/systems submitted data for their commercial populations (excluding Medicaid or Medicare beneficiaries). They reported information on their method of data collection, sample size, eligible population, and percent of patients receiving the measure. Other submitted information included accreditation status, audit information, and diabetes registry use. Participants were assigned a unique, confidential code.

HEDIS® Selected Cardiovascular Care measures are:

1. Controlling High Blood Pressure, <140/90 mmHg (ages 46-85 years);
2. Beta-blocker Treatment after Heart Attack (35 years and older); and
 - For care provided in 2005, Persistence of Beta-Blocker After a Heart Attack was added (35 years and older).
3. Cholesterol Management After Acute Cardiovascular Event (Cholesterol Screening and Cholesterol Controlled, LDL-C <130 mg/dL).
 - For care provided in 2004, Cholesterol Controlled, LDL-C <100mg/dL was added.
 - For care provided in 2005, the Cholesterol Management measure specifications changed significantly. The NCQA chose not to use or report 2005 data for these measures, due to problems with the denominator. The HMO Collaborative also did not use or report data for these measures in 2005.

All HMOs participating in the Project in a given measurement year were included in the figures. Similar trends exist for the 12 continuously participating plans.

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The HMO Collaborative partners include: Wisconsin Diabetes Advisory Group; the Wisconsin Diabetes Prevention and Control Program; the Wisconsin Asthma Program; the Wisconsin Heart Disease and Stroke Prevention Program; the Wisconsin Comprehensive Cancer Control Program; MetaStar, Inc.; the Division of Health Care Financing; the Wisconsin Association of Health Plans; the Wisconsin Medical Society; Wisconsin Employee Trust Funds; Pfizer; and the University of Wisconsin Population Health Institute.

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The Wisconsin Heart Disease and Stroke Prevention Program
<http://dhfs.wisconsin.gov/Health/cardiovascular/>

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